

MANPOWER AND PROJECT PLANNING

by

N 9 2 - 1 3 8 4 4

Professor David W. Johnson
Business and Education Department
Saint. Paul's Collage
Lawrenceville, Virginia 23868

Client Organization

The client for this project is the Facilities Engineering Division (FENGDD) within the Systems Engineering and Operations Directorate of the Langley Research Center, NASA, Hampton, Virginia. The Division's primary responsibility is to manage projects assigned to it, usually for the construction or rehabilitation of facilities and ensure that the project meets its technical objectives on schedule and within budget. In the the period of June 1, 1990 to May 31, 1991, FENGDD managed 120 construction projects with a total estimated construction cost of \$357.7 million.

The complexity of this management environment can be judged in part by the number and size of these projects further multiplied by the fact that these are multiple year, multiple phase projects. For instance, one project---Modifications to the 8 Foot High Temperature Tunnel has already spanned six fiscal years, while another, Refurbishment of the Hypersonic Facilities Complex, entails work on five facilities.

The purpose of this project was to study how manpower and projects are planned at the Division and to make recommendations for improving the effectiveness and productivity of the tools that are used.

Findings

The existing manpower and project planning processes (including the management plan for the Division, existing manpower planning reports, project reporting to LaRC and NASA Headquarters, employee time reporting, financial reporting, and coordination/tracking reports for procurement) were discussed with several people and project planning software was evaluated.

- 1. None of the tools now in use directly supports initial project planning or manpower planning.**
- 2. The tools now in use are stand-alone tools and their usefulness is limited to their special purpose.**
- 3. Considerable effort is needed to produce and maintain data about FENGDD projects. Yet, the return on this investment is further limited since much of it uses manual or only partially automated systems.**
- 4. These tools do not give FENGDD management a ready ability to evaluate the impact of a new project or the many changes to existing projects. One need that has been voiced often, for instance, is to assess the impact of slippage or early completion in one project upon another project or upon the manpower that is committed to both.**

5. There exists project planning software that is economical to purchase and that can be implemented on existing PCs within the Division.

6. There is experience using project management software within the Division. One major project, the Hypersonics Facilities Complex, has been using MacProject II and Excel as project planning and tracking tools.

7. There is a requirement for quality graphics. In the formal monthly project review meetings and day-in and day-out, Facilities Engineering people meet NASA management, their peers, and contractors to discuss a very large number of project tasks. Accurate communication is mandatory

8. The Division's administrative support staff is experienced in using MacIntosh PCs and is enthusiastic for the quality of graphics that they currently obtain from them.

Recommendations and Status

Software The recommendations are: (1) Select the MacProject II, Excel, and the 4th Dimension software packages for project planning, spreadsheet analysis, and database management and each includes graphics capabilities; (2) Order two sets of this software: one for the Assistant, Program Integration and the other for the Program Analyst who supports him. **Status** Just prior to drafting this report, these three software packages were installed on PCs for both people.

Manpower Planning The recommendations are: (1) Train the Program Analyst in the 4th Dimension software; and (2) build an initial Manpower database with the 4th Dimension software package. This would then become a working tool with the data used and maintained by the Program Analyst **Status** Training for the Program Analyst has begun and the initial manpower database is now being developed.

Project Planning The recommendation are: (1) Train the Assistant, Program Integration and the Program Analyst in the MacProject II software; (2) Develop a prototype project plan for the major CoF project, the Minor CoF project with Preliminary Study and the Minor CoF project without Preliminary Study. Identify standard tasks for use as the starting point for new project planning; (3) Develop a demonstration of manpower and project tracking using MacProject II and 4th Dimension to be used as a briefing and training tool; (4). Direct that new project planning will use MacProject II and will be supported by the Program Analyst; and,. (5) .If continued MacProject II support is required for the Hypersonics Project, move the project data and responsibility for its maintenance to the Program Analyst. **Status** Training for the Program Analyst has begun. The standard administrative milestones have been defined by FENG D management for the prototype projects and are being used in MacProject II. An example of the typical construction and engineering milestones in a project is now being developed and a dictionary of standard data elements has been started.

August 5, 1991

Reference: Kerzner, Harold. Project Management: A Systems Approach To Planning, Scheduling, and Controlling, New York: Van Nostrand Reinhold, 1989.